

XVIII.—ON THE FRUIT BATS OF THE
GENUS *PTEROPUS* INHABITING THE
ANDAMAN AND NICOBAR ARCHIPE-
LAGOS, WITH THE DESCRIPTION OF
A NEW SPECIES.

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Having recently had occasion to examine the species of *Pteropus* recorded from the Andaman and Nicobar Archipelagos, with the object of ascertaining what may be regarded as established facts respecting the differentiation and distribution of the recognised forms, and finding, as the result of my studies, that many of the doubtful references in relation to the synonymy of the several species are not only thereby corrected, but have likewise furnished much additional data in respect to their range of distribution, I have, upon careful consideration, deemed it expedient to place on record the conclusions at which I arrived, the liberal material at my command having offered exceptional opportunities for the carrying out of this object. One species hitherto confounded with the large Malayan Kalong I have been obliged to describe as new.

Five well-defined and characteristic species of *Pteropus* are now known to occur in the Nicobar and Andaman Archipelagos, three of them, we may conclude, being peculiar to the islands, and the remaining two only occurring as stragglers; one of these latter species, *viz.*, *Pteropus celano* (= *cdulis*), however, should possibly be regarded as a regular migrant during the monsoons.

Pteropus melanotus, Blyth.

1846. *Pteropus cdulis*, Blyth, *Journ. Asiat. Soc. Bengal*, xv, p. 367.
1861. *Pteropus nicobaricus*, Fitzinger, *Sitzungsber. Math. Naturw. Cl. Kais. Akad. Wissensch., Wien*, xlii (1860), p. 389, 1861 (*nomen nudum*).
1863. *Pteropus melanotus*, Blyth, *Cat. Mammal. Mus. Asiat. Soc. Bengal*, p. 20 (*nomen nudum*).
1869. *Pteropus nicobaricus*, Zelebor, *Reise der Oesterreichischen Fregatte Novara, Zool.*, i (Wirbelthiere), 1, Mamm., p. 11.

From a brief passage occurring in one of a series of letters¹ written by the Rev. John Gottfried Haensel, a missionary of the

¹ Letters on the Nicobar Islands, their Natural Productions, and the Manners, Customs, and Superstitions of the Natives, etc., etc. Addressed by the Rev. John Gottfried Haensel (the only surviving missionary), to the Rev. C. J. Latrobe, 1812.

Church of the United Brethren, descriptive of the ethnology and natural productions of the Nicobar Islands, observed during a residence of eight years in the group (1779-1787), and also from the widely scattered references to be met with in the journals of later observers, we have long known that the rank and luxuriant forests which clothe a greater part of the numerous islands comprising this archipelago, have afforded subsistence to at least one representative of the family of large frugivorous bats belonging to the genus *Pteropus*. Fitzinger, however, in 1861 (*Sitzungsb. Wien Akad.*, p. 389) was the first writer to recognise this bat as a distinct species by name, specimens having reached Vienna, together with other material collected in Car-Nicobar by the naturalists attached to the Austrian exploratory expedition of the frigate "Novara" in 1858. Although Fitzinger assigned the name of *Pteropus nicobaricus* to this bat, no details of the specific characters which constituted the species were given until Zelebor¹ published his exhaustive, though scarcely diagnostic, description in 1869.

It should, however, be remembered that prior to the publication of Fitzinger and Zelebor's name and description, specimens of the same Nicobarian bat had been deposited in the Museum of the Asiatic Society of Bengal so long ago as 1846 by Captain H. Lewis, the examples being contained in a collection made during a cruise of the schooner "L'Espiegle" in the previous year, amongst the islands of the Nicobar Archipelago; and this collection, supplemented by additional material bequeathed to the Museum of the Society by the Rev. J. Barbe, formed together the subject of a paper by Blyth in the *Journal of the Asiatic Society of Bengal* (vol. xv, 1846, p. 367), descriptive of the vertebrated fauna of the Nicobar Islands; and we may here conveniently give the following transcription taken from his original description of the bats contained in the collection:—

"*Pteropus edulis*, *Pt. javanicus*, Horsf., etc., etc.—Three specimens are alike remarkable for having the throat and front of the neck black, the head blackish, the nape dull reddish-brown, the back shining black, flanks and vent dull black, and the rest of the under-parts dull reddish-brown, much paler in the centre."

The detailed form of this notice would lead us to infer that Blyth was constrained to include these specimens under this title, although the differentiation of the examples in form and colour must have strongly impressed him at the time he compiled his article. When seventeen years later he published the *Catalogue of Mammalia in the Museum of the Asiatic Society of Bengal* (1863), these original specimens of Captain Lewis's received specific distinction under the name of *Pteropus melanotus*. Immediately following the publication of the Catalogue, Dr. Frederick J. Mouat's book of *Adventures and Researches among the Andaman Islands* was issued, with a zoological appendix contributed by Blyth; and in an

¹ *Reise der Oester. Freg. Novara*, Saugethiere, p. 11.

introductory note we learn that a "species" (of *Pteropus*) "is common in the Nicobars which is styled *Pteropus nicobaricus* by the naturalists of the 'Novara' expedition, and *Pt. melanotus* in the *Catalogue of the Mammalia in the Museum of the Asiatic Society*." Proceeding, Mr. Blyth, in a succeeding passage, admits that he is unacquainted with the literature describing the discoveries of the Austrian expedition.

Through the courtesy of Dr. Annandale, the Superintendent of the Indian Museum, Calcutta, I have been enabled to examine one of Captain Lewis's specimens, which is also one of the originals of Blyth's first and early description of 1846, and likewise the type specimen of his *Pteropus melanotus* of 1863. The example agrees perfectly in all its essential characters with the *Pteropus nicobaricus* described by Zelebor in 1869. Under these circumstances it is evident, therefore, Zelebor's name can no longer be employed for this species, except as a synonym, having been for many years, as I have shown, superseded by the published description of Blyth in 1846. The species must, in consequence, now stand as *Pteropus melanotus*, Blyth. This revision is, I believe, in accord with the views of Dr. Gerrit Miller, Jr., who first directed attention to the ambiguousness of the earlier identifications.

The bat described by Peters as *Pteropus condorensis*¹ has been referred by Dobson to this species (*Monograph of the Asiatic Chiroptera*, 1876, p. 18). Although related to *Pt. melanotus* in some characters, it is quite a distinct and characteristic form, confined to the distant island of Pulo Condor in the China Sea, lying off the Annamese coast, about lat. 8° 40' N., long. 106° 42' E. Some of the small islands adjoining the Acheen coast of Sumatra (Pulo Way, Pulo Brasse, etc.) have, I think, been confounded by Dobson with this far-off island, his references in the habitat given for *Pteropus nicobaricus* in the *Monograph of the Asiatic Chiroptera* leading one to this inference. That these islands are inhabited by a species of *Pteropus* we possess ample evidence. It also occurs on the mainland, and what I take to be the same species has been recorded as far south as Nias Island. I cannot, however, agree as to the specific identity of these bats with *Pteropus melanotus* (= *nicobaricus*), which, I think it will be found, is peculiar to the Nicobar group, while the Sumatran bat is a not yet differentiated species. To decide this point, however, it will be necessary to acquire a far larger and more representative collection of specimens than is at present available for study.

Both male and female specimens of *Pteropus melanotus* closely resemble one another in the coloration of the fur, exhibiting but little variation from that which was so accurately recorded by Blyth,² and described later, in much more detail, by Dr. G. Miller, Jr.,³ differing greatly in this respect from the following species,

¹ *M. B. Akad., Berlin*, 1869, p. 393.

² *Journ. Asiat. Soc. Bengal*, xv, p. 367.

³ *Proc. U. S. Nat. Mus.*, xxiv, p. 784.

about to be described, of which the two sexes might readily be mistaken at first sight for distinct species.

TABLE OF MEASUREMENTS OF *Pteropus melanotus*.

	Head and body.		Tibia.	Foot.	Calcar.	Forearm.	Thumb.	Second digit.	Third digit.	Fourth digit.	Fifth digit.	Ear from meatus.	Ear from crown.	Width of ear.
	Mm.	Mm.	Mm.	Mm.	Mm.	Mm.	Mm.	Mm.	Mm.	Mm.	Mm.	Mm.	Mm.	Mm.
Blyth's type (female).	266	65	46	13	148	65	110	278	215	189	28	23	15	
Male, Galatea River, Gt. Nico- bar.	273	77	52	14	163	72	116	280	225	190	30	25	18	
Female, Galatea River, Gt. Nico- bar.	283	78	45	16	170	75	120	293	223	202	30	23	21	

Pteropus tylleri, sp. nov.

Pteropus tylleri, Blyth, in litt.

1873. *Pteropus nicobaricus*, Dobson. *Journ. Asiat. Soc. Bengal*,
xlii, pt. 2, p. 198 (*partim*).
1876. *Pteropus nicobaricus*, Dobson, *Monogr. Asiat. Chiropt.*, p. 17
(*partim*).
1878. *Pteropus nicobaricus*, Dobson, *Cat. Chiropt. B. M.*, p. 54
(*partim*).
1891. *Pteropus nicobaricus*, Blanford, *Fauna Brit. Ind. Mamm.*, p.
260 (*partim*).

Again, quoting from the appendix to Dr. Mouat's *Adventures and Researches among the Andaman Islands* (1863), p. 353, attention is directed by Blyth to the entire absence of any representative of the genus *Pteropus* in the Andaman group, although the species, *Pteropus melanotus*, as we have seen, is frequent on most of the islands comprised in the adjacent Nicobar Archipelago.

In the year 1864, however, Lieut.-Colonel R. C. Tytler, the Officiating Governor at the Port Blair Penal Settlement, who contributed largely to our knowledge of the fauna of the Archipelago during his term of residence, transmitted to the Museum of the Asiatic Society the first authentic specimens of an Andamanese *Pteropus* procured in the neighbourhood of the Settlement; and Blyth, who examined the specimens, found he was unable to refer them to any existing species of the genus, and accordingly adopted the MS. and unpublished name of *Pteropus tylleri*, for the species. The original labels, in Blyth's handwriting, are still attached to the specimens.

The present form is a most distinct and good species, bearing some resemblance to *Pteropus celæno* in colour only; and it is owing to this fact, I believe, its supposed identity with that well-known and widely distributed form has been generally accepted, and the specific distinction of the species so long ignored. As a matter of fact *Pteropus celæno* is only a straggler in the Nicobars, and appears to be absent altogether from the whole of the Andaman Islands, all records which have come to us being really founded upon examples of the species now under discussion. From these circumstances it will not perhaps appear so much a matter of speculation that such a characteristic and well-defined type should have escaped earlier notice.

Dobson, in his paper "On the Pteropidæ of India and its Islands" (*Journ. Asiat. Soc. Bengal*, xlii (1873), p. 198), very correctly expressed much doubt as to whether he was not at fault in associating under the one name both the Nicobar and Andamaese bat; he even went so far as to submit examples to Professor Peters. The vague statement furnished by that authority "that they agree in the form of the ear and feet" with Zelebor's type in the Vienna Museum led him, we are told, to accept unreservedly this view also, and to unite the two forms. Had he had before him a representative series of specimens he could scarcely have failed to realize the error of a conclusion based as it was upon such slight and unstable characters.

This species is generally distributed among the islands of the Andaman group; the stretch of ocean known as Ten-Degree Channel, separating Little Andaman from Car-Nicobar, forms its southern barrier. Dr. Anderson was in error when he extended its range to the Nicobars. Through the kindness of Dr. Annandale I have been enabled to examine the original skin, No. 92 f. of the Catalogue, which Anderson records as black, with the nape faintly chestnut, and as coming from the South Nicobars; it fortunately still retains Blyth's label, and this shows Dr. Anderson wrongly transcribed the locality he attributed to it. The specimen is one which was contained in the original collection formed by Lieut.-Colonel Tytler, and is, like the rest of the examples in the series, from the Andamans, as the label testifies. *Pteropus tytleri* occurs on Barren Island, where it shows a tendency to deteriorate in size and further deviates from specimens collected in the type locality by having a light and conspicuous oval-shaped area of greyish hairs occupying the chest and stomach. This is the first recorded instance, I believe, of any species of *Pteropus* having been taken on Barren Island; the specimens were collected by Mr. B. B. Osmaston.

Description of the type, an adult male (skin), collected on Rutland Island, South Andamans, March 5th, 1907, by Mr. B. B. Osmaston.

Ears of medium length, naked, projecting much beyond the short fur; their anterior and posterior edges nearly equally concave, finishing with a bluntly-pointed tip. The whole of the head,

throat and under parts deep black; posterior back black, the fur closely adpressed, 40 mm. broad at the narrowest parts; muzzle black, sparingly covered with hair; mantle conspicuous and well defined, a dark canary, changing to orange at the margins and weakly developed orange-coloured tufts on shoulder glands. Fore-limbs and membranes nearly naked above, a few hairs only extending along the upper side of the humerus and forearm; upper and posterior sides of thighs very furry; lower legs naked. Below, the fur sparingly covers the antibrachial membrane, the humerus, femur, and the wing-membrane internal to them, and also passes along the outer side of the forearms in a narrow band of weakly-developed hair. The uropatagium membrane is well developed but entirely concealed by the fur between the knees and body.

The general characters of the teeth are the same as in *Pteropus melanotus*,—strong and heavy, with well-developed basal cusps. Anterior upper premolar minute, other premolars produced horizontally, their length equal to once-and-a-half their breadth. Last molars above and below large and well developed, above more than one-half and below scarcely one-half of the penultimate molars. Anterior lower premolar of equal size to last molar, separated from the canine and next premolar by diastemata each equal to its own diameter.

Skull.—Greatest length, 70 mm.; condylobasal length, 63; basilar length, 61; median palate length, 37; palatal breadth between anterior molars, 13; zygomata breadth, 36; least interorbital breadth, 10.5; breadth between tips of postorbital processes, 28; greatest breadth of brain case above roots of zygomata, 23.8; greatest depth of brain case, 18; occipital depth, 12; depth of rostrum at middle of diastema, 10; mandible, 58; maxillary tooth row exclusive of incisors (alveoli), 28; mandibular tooth row exclusive of incisors (alveoli), 31.

The dimensions of this specimen will be found in the table of measurements.

An old female from the type locality is intensely black throughout, the head inclined to greyish, and the mantle only very faintly distinguishable; with other specimens it is more conspicuous, but in no case so strong in colour as the males. The individual variation in a series is very great, scarcely any two being alike; a very young example, with head and body only 140 mm., shows the bright collar very clearly, which is produced and completely encircles the throat.

A skin in my collection, from Little Jolly Boy Island, that was collected by Hume in 1873 and referred to *Pt. nicobaricus*, belongs to the present species.

TABLE OF MEASUREMENTS OF *Pteropus tytleri*.

	Head and body.	Tibia.	Foot.	Calcar.	Forearm.	Thumb.	Second digit.	Third digit.	Fourth digit.	Fifth digit.	Ear from meatus.	Ear from crown.	Width of ear.
	Mm.	Mm.	Mm.	Mm.	Mm.	Mm.	Mm.	Mm.	Mm.	Mm.	Mm.	Mm.	Mm.
Male (type) Rutland Island.	275	68	46	15	150	70	113	300	237	217	34	29	19
Female, Rutland Island.	277	74	48	14	148	85	113	299	232	209	34	28	19
No. 92 f. Indian Museum (Tytler, 1864).	261	71	36	12	125	55	110	300	225	..	32	23	16
Male, Barren Island.	250	66	40	13	165	66	110	283	221	197	25	20	17
Female, Barren Island.	257	63	36	12	160	55	105	254	205	190	22	17	17

Pteropus celæno.

1758. *Vespertio vampyrus*, Linn., *Syst. Nat.*, Ed. x, 1, p. 31 (*partim*).

1804. *Vespertio celæno*, Hermann, *Observ. Zool.*, 1, p. 13.

1810. *Pteropus edulis*, Geoffroy, *Ann. Mus.*, xv, p. 90.

This species ranges throughout the Nicobar Island as a migrant, but has a very local distribution, arriving generally during April at the commencement of the south-west monsoon and leaving again about September. The naturalists attached to the "Novara" expedition, however, met with it on Car-Nicobar during their stay in February and March, which shows a general exodus of the species does not take place. I have no record of this form extending its range into the Andamans, although I have made special enquiries for it.

I examined a skull from the Mergui Archipelago which has been attributed to *Pteropus nicobaricus*; it proved, however, to be a characteristic specimen of the species now under review.

Pteropus medius.

1827. *Pteropus medius*, Temm., *Monog. Mammal.*, 1, p. 176.

The Indian Flying Fox occurs in the Andamans as an occasional and rare straggler, and has only been met with at two points on North Andaman Island—Reef Inlet, and in the neighbourhood of Cape Price.

It is, I believe, unknown in the Nicobar Archipelago.

Pteropus faunulus.

1902. *Pteropus faunulus*, Miller, *Proc. U. S. Nat. Mus.*, xxiv, p. 785.

I can add little to Dr. Miller's excellent description of this interesting form. The only specimen I have examined belongs to the same sex (male) as the type specimen, with which it closely agrees in all essential details. The forearm, however, measures 121 mm.

Of the habits of this bat I could gain little information; it feeds principally upon plantains, shaddock, and papaya, and only occurs in small parties of twos and threes. When disturbed it clings immovably to the under sides of the leaf or bough upon which it may be resting, showing no sign of life when its means of support is violently disturbed, or the animal itself actually touched.

In conclusion I beg to acknowledge the most kind assistance rendered me by Major W. Browning and Mr. B. B. Osmaston, and also by Dr. Lorenz, of the Naturhistorisches Hofmuseum, Vienna, who forwarded the type specimen of *Pteropus nicobaricus* to London for my inspection.